

USSR

UDC 678.643'42'5:66.018.86.01:536

BAKAYEVA, V. P., YEGOROVA, Z. S., and KARPOV, V. L.

"Thermal Stability of E-41 Epoxy Resin after γ -Radiation"

Moscow, Plasticheskiye Massy, No 5, 1973, pp 20-24

Abstract: Some results are described from a study by the methods of mass spectrometry, derivatography and infrared spectrometry of the thermal stability of epoxy resins congealed by different congealants and subjected to gamma radiation in the dosage range of 50-1,000 Mrads.

The thermal stability of the uncongealed epoxy resin depends on the molecular weight, and the thermal stability of the congealed epoxy resin after irradiation and the radiation resistance depend on the type of congealant. The thermal destruction of the nonirradiated and irradiated congealed epoxy resins depends on the irradiation medium. The quantity and composition of the gases released during irradiation of the epoxy resins congealed by different congealants will depend on the irradiation temperature.

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UDC 678.743.22:66.095.268

DAKIN, V. I., YEGOROVA, Z. S., and KARPOV, V. L.

"The Effect of Triallyl Esters of Cyanuric or Isocyanuric Acids on the Radiation Crosslinking of Polyvinyl Chloride"

Moscow, Plasticheskiye Massy, No 6, 1973, pp 37-38

Abstract: It was shown that the effectiveness of the crosslinking of polyvinyl chloride compositions containing the triallyl ester of cyanuric or isocyanuric acids is identical. Therefore the radicals forming during the isomerization process of triallyl ester of cyanuric acid into the isocyanuric acid are of no consequence as far as the spacial structure of the composition is concerned. These data support the hypothesis of the reaction mechanism based on the formation of free radicals due to the splitting of low molecular weight fragments from the allyl group and from the macromolecules of the polymer itself.

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Polymers and Polymerization

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USSR

UDC 541.64:547.39:674.03

LEBEDEV, V. T., SUMINOV, S. I., SHIRYAYEVA, G. V., KARPOV, V. L., and NOVIKOV, V. Ya.

"Effect of the Addition of Organophosphorus Compounds on the Polymerization of Methyl Methacrylate in Cellulose"

Moscow, Vysokomolekularnyye Soyedineniya, Vol 14, No 2, Feb 72, pp 422-426

Abstract: The effect of various classes of organophosphorus compounds on the kinetics of radiation induced polymerization of methyl methacrylate [MMA] in cellulose was studied. The influence of dialkyl-, and trialkyl phosphites and trialkyl phosphates, as well as the effect of the size of alkyl radical within a group on the polymerization rate of MMA in wood was found to be increasing in the order: dialkyl phosphites < trialkyl phosphites < trialkyl phosphates, and within the radical group: methyl < ethyl < butyl analog. It was demonstrated that the concentration of tributyl phosphate [TBP] in MMA has a positive effect on the combustibility of the wood-plastic material [WPM]: a 30% content of TBP imparts fire retarding properties on the WPM. Study of the physical-mechanical properties of WPM containing various concentrations of TBP showed that optimal resistance to static bending across the fibers and to shearing along the fiber length is shown in WPM prepared from a 9:1 mixture of MMA:TBP.

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USSR

UDC 537.342.5

VAYSBERG, S. E., SICHMAN', V. P. and KANPOV, V. L.; Scientific-Research
Institute imeni L. Ya. Karpov

"A Study of Radiation-Induced Electric Conductivity in Polymers"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol XIII, No 11, 1971, pp 2502-2507

Abstract: As is known, the electric conductivity of polymers varies sharply in the presence of ionizing radiation, but returns to its original level after removal of the latter. Seven polymers were studied in this connection (high-pressure polyethylene, low-pressure polyethylene, etc.) and for these the relationship between radiation conductivity σ and dose rate \dot{d} and temperature T was determined.

Definite linear portions of $\log \sigma = f(T)$ were found to agree among themselves for all the polymers studied, within the limits of the Rose-Powler model (they had the same slope). Areas of temperatures with deviation from that required by the model were observed, this being explained on the basis of structural transitions in the polymers corresponding to change in the concentration of traps, a result of the presence of structural defects.

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1/2 024 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--DISTRIBUTION AND EXCRETION FROM MICE (INTACT AND WITH
TRANSPLANTABLE TUMORS) OF C PRIME14 AURANTIN -U-
AUTHOR--(05)-SUSKOVA, V.S., KHASIGOV, P.Z., CHERNOV, V.A., KARPOV, V.L.,
SEREBRYAKOV, N.G.
COUNTRY OF INFO--USSR
SOURCE--ANTIBIOTIKI, 1970, VOL 15, NR 5, PP 437-441
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--HOUSE, TISSUE TRANSPLANT, TUMOR, SARCOMA, LYMPHATIC SYSTEM,
LIVER, KIDNEY, LUNGS, SPLEEN, SMALL INTESTINE, RADIOACTIVE TRACER,
THYMUS GLAND, AUTINEOPLASTIC DRUG, CARBON ISOTOPE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1994/1141 STEP NO--UR/0297/70/015/005/0437/0441
CIRC ACCESSION NO--AP0115160
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0115160

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISTRIBUTION OF C PRIME14 AURANTIN IN MICE INTACT AND WITH TRANSPLANTABLE LYMPHOLEUCOSIS NK-LY AND LYMPHOSARCOMA LIO 1, AND ITS EXCRETION AFTER SINGLE INTRAVENOUS OR SUBCUTANEOUS ADMINISTRATIONS WERE STUDIED. THE DISTRIBUTION OF THE DRUG WAS NOT REGULAR. RADIOACTIVITY IN THE LIVER, KIDNEYS, LUNGS AND SPLEEN REGISTERED IN 30 TO 60 MINUTES AFTER THE DRUG ADMINISTRATION WAS REDISTRIBUTED IN 6 HOURS AFTER INTRAVENOUS ADMINISTRATION AND IN 18-24 HOURS AFTER SUBCUTANEOUS ADMINISTRATION WITH AN INCREASE IN ITS LEVELS IN THE SPLEEN, THIN INTESTINE, THYMUS. MAXIMUM ACTIVITY IN TUMORS WAS OBSERVED BY THE END OF 24 HOURS, THE LEVEL IN NK-LY BEING HIGHER THAN IN LIO 1. AFTER INTRAVENOUS ADMINISTRATION THE ORGANS WERE MAINLY FREE FROM ACTIVITY BY THAT TIME, WHILE AFTER SUBCUTANEOUS ADMINISTRATION THE ORGANS WERE MAINLY FREE FROM ACTIVITY BY THE END OF THE 2ND DAY AND LATER. AFTER SUBCUTANEOUS ADMINISTRATION OF C PRIME14 AURANTIN FOR 3 TIMES AT AN INTERVAL OF 48 HOURS NO ACCUMULATION OF THE DRUG IN THE ORGANS AND TISSUES, INCLUDING TUMORS WAS OBSERVED. THE RESULTS OBTAINED ARE DISCUSSED. FACILITY: INSTITUTE OF MEDICAL RADIOLOGY OF ACADEMY OF MEDICAL SCIENCES OF THE USSR, OBNINSK.

UNCLASSIFIED

USSR

SMETANINA, L. B., LESHCHENKO, S. S., YEGOROVA, Z. S., STARODUBTSEV, D. S.,
KLINSHPONT, E. R., KAPLUNOV, M. Ya., and KARPOV, V. L., Scientific Research
Physico-Chemical Institute imeni L. Ya. Karpov

"Radiation Structuralization of Ethylenepropylene Rubber in Presence of
N-Phenylmaleimide Sensitizer"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 12, No 11, Nov 70, pp 2,401-
2,407

Abstract: The process of radiation structuralization of ethylenepropylene rubber [SKEP] and its mixtures with N-phenylmaleimide [NPMI] was studied. It was determined that NPMI is a sensitizer for radiation crosslinking of SKEP, the rate of gel-formation being directly proportional to the quantity of NPMI added. The effect is neither ionic nor radical; addition of NPMI does not affect the production of free radicals and the recombination of the radicals is identical with or without NPMI; liberation of charges trapped in the traps shows also no effect on the process. It has been proposed that NPMI acts as an acceptor of hydrogen during the γ -irradiation, being reduced to N-phenylsuccinimide in the process. Thus it aids in production of more vinylidene bonds in SKEP and accelerates the crosslinking of SKEP.

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1/2 041 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--RADIATION EMULSION POLYMERIZATION OF STYRENE -U-
AUTHOR--(05)-LUKHOVITSKIY, V.I., POLIKARPOV, V.V., LEBEDEVA, A.M.,
LAGUCHEVA, R.M., KARPOV, V.L.
COUNTRY OF INFO--USSR
SOURCE--KHIM. VYS. ENERG. 1970, 4(2), 173-4
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL REACTION RATE, RADIATION EFFECT, EMULSION
POLYMERIZATION, STYRENE, GAMMA IRRADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/1623

STEP NO--UR/0456/70/004/002/0173/0174

CIRC ACCESSION NO--AP0112617

UNCLASSIFIED

2/2 041

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112617

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE KINETICS WERE STUDIED OF EMULSION POLYMN. OF STYRENE (I) (K LAURATE (II) WAS USED AS THE EMULSIFIER) IRRADIATED WITH GAMMA RAYS. THE REACTION ACTIVATION ENERGY IS 7.7 KCAL-MOLE. THE FOLLOWING RELATIONS ARE OBEYED $\text{UPSILON IS APPROXIMATELY EQUAL TO } I \text{ PRIME}^{0.5}$ IS APPROXIMATELY EQUAL TO $(C \text{ MINUS } C \text{ SUBM}) \text{ PRIME}^{0.5}$ IS APPROXIMATELY EQUAL TO $\text{EXP}(\text{NEGATIVE } 4600\text{-RT})$ WHERE UPSILON IS THE REACTION RATE, I IS THE IRRADN. INTENSITY, C IS THE CONCN. OF II, AND C SUBM IS THE CRIT. I CONCN. OF THE MICELLE FORMATION.

FACILITY: FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr:

AP0052508

Abstracting Service:

CHEMICAL ABST. 5-7c

Ref. Code:

4R0460

101309z Dielectric properties of poly(tetrafluoroethylene) during irradiation with cobalt-60 γ -rays and with fast electrons. Matveev, V. B.; Vaisberg, S. E.; Karpov, V. E. (Fiz.-Khim. Inst. im. Karpova, Moscow, USSR). *Vysokomol. Soedin., Ser. B* 1970, 12(1), 31-5 (Russ.). The increase of $\tan \delta$ (dielectric loss angle) during the irradiation of poly(tetrafluoroethylene) (I) in air or in vacuo without previous degasification is due to the formation of peroxy radicals in the middle or at the ends of the I chain, i.e., $-\text{CF}_2\text{CF}(\text{OO}\cdot)\text{CF}_2-$ (II) or $-\text{CF}_2\text{CF}(\text{OO}\cdot)$ (III) groups. Heating the irradiated I to $\leq 150^\circ$ destroys III; II decomp. only at 250° . The rate of $\tan \delta$ increase is not limited by the diffusion rate of O into I when the radiation rate is 250 rads/sec. However, at 7.3×10^4 rads/sec, O diffusion controls the rate of $\tan \delta$ increase.

CPJR

REEL/FRAME

19821149

Polymers and Polymerization

USSR

UDC: 691.11:678.744:541.15

GLUKHOV, V. I., SHIRYAYEVA, G. V. and KARPOV, V. L., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov, Moscow, State Committee for Chemistry

"A Study of the Kinetics of Radiation Polymerization of Methylmetacrylate in Wood"

Moscow, Khimiya Vysokikh Energiy, Vol 4, No 2, 1970, pp 139-142

Abstract: The radiation-chemical modification of wood is a promising and widely-used method of obtaining wood-plastic materials offering substantial advantages in physico-mechanical properties and improved water- and moisture-resistance. The authors studied the kinetics of the radiation polymerization used in this method by treating aspen wood impregnated with methylmetacrylate with gamma-radiation from Co^{60} . Results showed that reduction of dose rate promotes monomer-to-polymer conversion: output of polymer per dose unit diminishes by 90% with a 100-fold increase in intensity. Temperature dependence of polymerization rate was studied and molecular weights of the extracted polymer were measured. Findings of the study are illustrated graphically.

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1/2 018 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--STRUCTURE FORMATION OF ETHYLENE PROPYLENE RUBBER UNDER THE
INFLUENCE OF GAMMA RADIATION -U-
AUTHOR--(04)-SMETANINA, L.B., LESHSHENKO, S.S., YEGOROVA, Z.S., KARPOV,
V.L.
COUNTRY OF INFO--USSR
SOURCE--KHIM. VYS. ENERG. 1970, 4(3), 274-5
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--ETHYLENE, PROPYLENE, COPOLYMER, RUBBER, GAMMA RADIATION,
POLYMER CROSSLINKING, GEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3008/0867 STEP NO--UR/0456/70/004/003/0274/0275
CIRC ACCESSION NO--AP0137895
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137895

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IRRADN. OF ETHYLENE PROPYLENE COPOLYMER (I) IN AIR CAUSES AN INCREASE OF THE GEL FRACTION TO A MAX. OF 54PERCENT AND A SUBSEQUENT DECREASE DUE TO DEGRADATION. IN VACUUM OR IN HE, THE IRRADN. CAUSES THE FORMATION OF VINYLIDENE END GROUPS WHICH REACT TO FORM CROSSLINKS. NEOZONE D PRESENT IN COM. I ALSO REACTS WITH THESE END GROUPS THUS SLOWING THE GEL FORMATION RATE. FACILITY: FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 036 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--SPECTROSCOPIC STUDY OF THE LOW TEMPERATURE RADIOLYSIS OF SOME
POLYOLEFINS -U-
AUTHOR-(04)-DZHIBGASHVILI, G.G., SLOVOKHOTOVA, N.A., LESHCHENKO, S.S.,
KARPOV, V.L.
COUNTRY OF INFO--USSR
SOURCE--KHIM. VYS. ENERG. 1970, 4(3), 281-2
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY, PHYSICS
TOPIC TAGS--IR SPECTRUM, RADIOLYSIS, POLYETHYLENE, PROPYLENE, BUTENE,
COPOLYMER, LOW TEMPERATURE EFFECT, CYCLIC STRUCTURE, FREE RADICAL,
POLYMER CROSSLINKING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3008/0861 STEP NO--UR/0456/70/004/003/0281/0282
CIRC ACCESSION NO--AP0137889
UNCLASSIFIED

2/2 036

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137889

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IR SPECTRA WERE STUDIED OF HIGH D. POLYETHELENE, ETHYLENE PROPYLENE COPOLYMER, AND ETHYLENE ALPHA BUTYLENE COPOLYMER, AFTER IRRADN. AT NEGATIVE 180DEGREES. THE APPEARANCE OF NEW IR BANDS OR THE INCREASE IN THE INTENSITY OF SOME OF THE ORIGINAL BANDS SHOWED THAT LOW TEMP., FREE RADICAL CROSSLINKING, FORMATION OF CYCLIC STRUCTURES (CYCLOPENTANES, CYCLOHEXANES), AND FORMATION OF TRANS VINYLENE GROUPS OCCURRED. FACILITY: FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 678.762.2-134.532:66.095.262

GLUKHOV, V. I., SHIRYAYEVA, G. V., and KARPOV, V. L.

"Radiational Modification of Wood Cellulose With a Styrene-Acrylonitrile Copolymer"

Moscow, Plasticheskiye Massy, No 11, 1972, pp 28-30

Abstract: Experimental results are reported of the study of copolymerization kinetics of styrene monomers with acrylonitrile in wood cellulose under the influence of γ -irradiation. Physical-mechanical properties of modified wood cellulose-polymer materials in relationship to the composition of impregnating material are described. It was shown that the use of styrene and acrylonitrile mixtures for radiational chemical modification of wood cellulose leads to the production of a stronger material with greater dimensional stability in aqueous media. Addition of acrylonitrile to styrene lowers the irradiation dose required for a complete polymerization of styrene. Best properties of modified wood cellulose are obtained with a 30-50 vol-% content of acrylonitrile in the impregnating material.

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USSR

UDC 681.2.083.8.082.7

DORZHIYEV, D. D., KARPOV, V. M.

"Linearization of the Characteristic Curve of Vibration-Frequency Pickup"

V sb. Vibratsionno-chastotn. preobrazovateli Ch. 1 (Vibration-Frequency Converters--Collection of works), Part 1, Moscow, "Energiya", 1970, pp 54-65 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 8, Aug 70, Abstract No 8.32.403)

Translation: The questions of linearization of the characteristic curves of vibration-frequency pickups on the basis of measurement of the difference of frequency of two sensing elements, tested during the application of the measured load extension and compression, are explained. Based on the analytical expression of the frequency of vibration of the element, the ratios are determined between the initial frequencies and the parameters of deviation of sensing elements which make possible the best linearity of the difference frequency. Analysis of the obtain conditions allows recommendation of a practical method of adjustment which results in the reduction of error of nonlinearity. 1 table, 5 ill., 4.

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USSR

UDC: 621.371

ANDRUSEVICH, L. K., KARPOV, V. N., and SHEYNMAN, D. I.

"Apparatus for Investigating Amplitude Probability Distribution and the Phase of Radio Signals Combined"

Moscow, Pribory i Tekhnika Eksperimenta, No. 3, 1971, pp 118-119

Abstract: A combined investigation of the fluctuations of phase and amplitude of short-wave signals in the ionosphere provides an insight to the physics of the signal fluctuations and permits estimating the potential noise immunity of phase-manipulated systems. The equipment described in this article for making such an investigation can obtain the conditional amplitude probability distributions and phase directly in the process of measurement. The block diagram of this apparatus is given, and its operation described. A separate block diagram of the phase fluctuation meter is also shown, together with a graph illustrating its operation. The authors express their gratitude to A. N. Shilovskiy for his assistance. They are associated with the Novosibirsk Electro-technical Institute.

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USSR

KARPOV, V. P., Moscow

UDC 536.46+532.593

"Determination of Acceleration of Combustion When a Shock Wave Interacts with a Flame"

Novosibirsk, Fizika Goreniya i Vzryva, No. 4, Dec. 70, p. 504-509.

Abstract: Experiments were performed in cylindrical combustion chambers using mixtures of oxygen plus methane, propane, hydrogen and acetylene. The shock wave introduced to the chamber deforms the flame front immediately upon contact, converts the laminar flow to turbulent flow and thus increases the combustion rate, forming a second shock wave. Formulas are presented for determination of the increase in combustion rate in the flame front as a result of interaction with the shock wave.

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USSR

UDC 539.3

KARPOV, V. V., FILATOV, V. N.

"Computation of Flexible Hollow Shells Under the Effect of Uniform Temperature"

V sb. Raschet prostranstv. sistem v stroit. mekh. (Calculation of Three-Dimensional Systems in Structural Mechanics — Collection of Works), Saratov, Saratov University, 1972, pp 193-196 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V105)

Translation: The problem of large flexible hollow shells placed in a given temperature field is considered. The consecutive load method is applied (see Petrov, V. V., Nauchn. dokl. vyssh. shkoly. Stroitel'stvo (Scientific Papers of the Higher School. Construction), 1959, No. 1, pp 27-35 -- RZhMekh, 1960, No 12, Abstract No 16562). The method makes it possible for the solution of the initial nonlinear system to replace the consecutive solution of linear systems of partial differential equations. The latter is reduced to systems of ordinary differential equations by the Bubnov-Vlasov method and these are integrated by applying the Runge-Kutta method. Temperature-bending curves are constructed for different values of the curvature parameter. Values of the maximum bending stresses at the center of the shell are tabulated for a given temperature and different curvatures. Yu. P. Zhigalko.

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USSR

UDC 539.3

KARPOV, V. V.

"Application of the Runge-Kutta Procedure to Functional Equations of the Non-linear Theory of Plates and Shells"

V sb. Raschet prostranstv. sistem v stroit. mekh. (Calculation of Three-Dimensional Systems in Structural Mechanics -- Collection of Works), Saratov, Saratov University, 1972, pp 3-8 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V107)

Translation: A version of the method of sequential loads is presented for solving problems in the theory of flexible plates and hollow shells that are located in a temperature field and loaded with a transverse load. The resultant system of equations is described in the form

$$F(r, T) = H, \quad (1)$$

where $F(r, T)$ is a nonlinear operator generated by the initial system and the boundary conditions. $F(r, T) = F_i(r_0, T)$, where $i = 1, 2, 3$; $r = (u, v, w)$; T and H are the intensities of the temperature and transverse loads, respectively; u, v, w are displacements along the coordinate axes. Starting from

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KARPOV, V. V., Raschet prostranstv. sistem v stroit. mekh., Saratov, Saratov University, 1972, pp 3-8

the consecutive loads method the load is divided into a series of stages

$$T = \sum_{l=0}^{n-1} h_{t_l}, H = \sum_{l=0}^{n-1} h_{q_l} \quad (2)$$

The solution for each new step r_{i+1} is sought as the sum of the solutions for the previous steps r_i and a certain increment Δr_i . The Runge-Kutta procedure is applied to find the increment, according to which Δr is represented in the form of a linear combination

$$\Delta r = \alpha k_1 + \beta k_2 \quad (3)$$

where k_1 and k_2 are certain functions of the operator F and its derivatives and α and β are constants. The coefficients α and β are selected such that the value of Δr calculated by the Taylor formula coincides up to the second order differential with the value of Δr obtained by formula (3). Detailed calculations accompanying the finding of α and β are given. It is noted that the proposed modification of the method of consecutive loads is of the second order of accuracy. 11 ref. V. B. Silkin.

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LEBEDEV, V. T., SUMINOV, S. I., SHIRYAYEVA, G. V., and KARPOV, V. V.

"Effect of the Addition of Organophosphorus Compounds on the Polymerization of Vinyl Monomers in Wood Cellulose"

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 3, Mar 71, pp 601-603

Abstract: Gamma initiated modification of wood cellulose was studied with mixtures of vinyl monomers and different levels of organophosphorous compounds (OPC). Many OPC accelerated polymerization of vinyl monomers in wood cellulose, this action decreasing in the following order: trialkyl phosphates > trialkyl phosphites > dialkyl phosphites, and within these groups methyl > ethyl > butyl. Treating birch with a mixture of methylmetacrylate and tri-butyl phosphate (9:1 ratio) gave a fire resistant material of greater strength than comparable control. Styrene, which normally polymerizes with difficulty under the influence of radiation was also studied. Addition of 10% of dimethyl phosphite to styrene increased its polymerization in aspen by 4 times. When the phosphite fraction was increased to 20%, the polymerization rate was increased 6-7 fold in comparison to the control.

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USSR

K
UDC 681.34:621.383.4

ALIMOV, KH. R., KARPOV, YU. K., and KURNOSOV, V. G.

"A Photoelectric Angle-to-Code Converter"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratztsy, Tovarnyye Znaki, No 4, 1970, p 102, patent No 260980, filed 21 Jun 68

Abstract: This Author's Certificate introduces a photoelectric angle-to-code converter which contains a code disc, light source, photo-pickups, and a reversible pulse counter. As a distinguishing feature of the patent, conversion error is reduced by adding an auxiliary photopickup with output connected through an amplifier to the input of an auxiliary reversible counter whose output is connected through a correction pulse shaper to the inputs of the main reversible counter.

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USSR

UDC 621.382

KARPOV, YU. S., LOTCTSKIY, B. YU., CKUNEV, YU. T., PASYNKOV, V.V., CHIRKIN, L.K.

"Varistors"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices And Their Application--Collection Of Works). No 23, Moscow, "Sov. radio," 1970, pp 305-317 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B265)

Translation: The mechanism of varistor action is considered, and the basic parameters and characteristics of varistors of domestic manufacture are presented, as well as the results of computation of certain characteristics of varistors, assuming that heating of the point contacts is a basic effect leading to nonlinearity of the current-voltage characteristic in the operating range of the change of currents and voltages. It is shown that by introducing an impurity with a different ionization energy into silicon carbide, it is possible to change within wide limits the value of the coefficient of nonlinearity of the current-voltage characteristic. The results are presented of investigations of the noise properties of varistors; and the dependence of the noise factor on the operating conditions of varistors and the temperature of the environment. 7 ill. 1 tab. 5 ref. Summary.

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1/2 018
UNCLASSIFIED
TITLE--CHARGE CONSTANCY IN DARK CURRENT MINIMUM POINTS IN HIGH RESISTANCE
CADMIUM SULFIDE SINGLE CRYSTALS -U-
AUTHOR--(02)-TIMAN, B.L., KARPOVA, A.P.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1554-6
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--CADMIUM SULFIDE, SINGLE CRYSTAL, ELECTRIC FIELD
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3003/0163
CIRC ACCESSION NO--AP0129419
STEP NO--UR/0181/70/012/005/1554/1556
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--04DEC70

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CIRC ACCESSION NO--AP0129419

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. FORMATION OF CHARGE WAS STUDIED IN
CDS CRYSTALS WITH RESISTIVITIES 10 PRIME11-10 PRIME12 OHM-CM IN A CONST.
ELEC. FIELD AT 35DEGREES. THE MAGNITUDE OF CHARGE WAS DETO. FROM THE
AREA UNDER THE CURVE OF THE TIME DEPENDENCE OF DISCHARGE CURRENT. THE
ROLE OF THE ELEC. FIELD IS NOT ONLY THAT OF TRANSPORT OF CHARGED
CARRIERS. FACILITY: VSES. NAUCH.-ISSLED. ISNT. MONOKRIST.,
KHARKOV, USSR.

UNCLASSIFIED

USSR

SMORCHKOV, A. P., TIKHOMIROVA, Z. M., SHVARTSMAN, M. N., and KARPOVA, G. V.,
8th Municipal Childrens' Hospital and Virological Laboratory of the Sverdlovsk
Rayon Sanitary Epidemiological Station, Moscow

"The Use of Anti-Influenza Gamma-Globulin in Comprehensive Treatment of In-
fluenza in Children"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 71, pp 492-493

Translation: This is a report on the results of using anti-influenza gamma-globulin in comprehensive treatment of laboratory-confirmed A2 influenza in 53 children hospitalized during the 1969 epidemic outbreak. Depending on the age and severity of the disease, the patients received one, two, or three doses of anti-influenza gamma-globulin two or three times in the first days of the disease. The moderately severe, catarrhal form of influenza was prevalent. Hypothermia lasted mostly 1-2 days. In most patients, catarrhal signs and bronchitis subsided on the 5th to 15th day of the disease. In 36 patients, influenza was complicated by pneumonia (mostly in the localized, nontoxic form) which subsided usually on the 13th day. The effectiveness of the comprehensive therapy was evidenced by the absence of septic complications and lethal outcomes.

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USSR

UDC 616.988.75-078

SHVARTSMAN, M. N., KARPOVA, G. V., and YURCHIKOVA, L. A., Sanitary-Epidemiological Station of the Sverdlovsk Region, Moscow

"Evaluation of the Suitability of Virological and Cytological Study Methods in Early Diagnosis of Influenza Under Practical Laboratory Conditions"

Moscow, Laboratornoye Delo, No 4, 1970, pp 226-228

Abstract: Considering the laboratory situation, the most suitable method for isolation of influenza virus A2 from the infectious material of patients is the method based on infection of chick embryos, because of its simplicity, availability and high sensitivity; the virus is identified by means of a rapid and sensitive inhibition of hemagglutination. The method for detection of specific antigen based on fluorescing antibodies is very specific and very sensitive, but the absence of cells in preparations (which occurs quite often), diminishes its usefulness as a diagnostic tool. Isolation of influenza virus A2 in cell cultures, using hemadsorption and the cytopathic effect, is 100 and 1000 times less sensitive respectively than the chick embryo method. The cell culture method may be made more sensitive by utilizing fluorescing antibodies, but this certainly does not make it more advantageous than the chick embryo method.

1/1

Ion Exchange

USSR

UDC 541.183.12

KAZAKOV, YE. V., KOZHINA, I. I., KARPOVA, I. F. (Deceased)

"Ion-Exchange Capacity of Copper Ferrocyanides"

Leningrad, Vestnik Leningradskogo universiteta, No 10, Fizika i Khimiya, No 2, May 71, pp 131-137

Abstract: The purpose of this investigation was to determine the theoretical total ion-exchange capacity of various copper ferrocyanide compounds as a function of composition and structure and to compare the theoretically rated total exchange capacity with the experimental values derived for each individual compound. Chemical and X-ray phase analyses indicate that both the composition and structure closely depend on the method and conditions of synthesis. Copper ferrocyanides are semi-functional weakly acid cationites with a rather low exchange capacity. The theoretical total exchange capacity of the experimental compounds was calculated on the basis of the chemical analytical data and the equivalent weights of ferrocyanide sorbents. The comparison of the theoretical total exchange capacity with the experimental

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USSR

KAZAKOV, YE. V., et al, Vestnik Leningradskogo universiteta,
No 10, Fizika i khimiya, No 2, May 71, pp 131-137

results indicate that the experimental values are much lower than
the theoretically rated capacities and cannot be approximated to
the upper limit without significant structural changes in the
ferrocyanide compounds.

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USSR

UDC: 621.315.592

AVER'YANOV, V. L., KARPOVA, L. N., KOLOMIYETS, B. T., LYUBIN, V. M., FEDOROVA, Ye. I., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences of the USSR, Leningrad

"Investigation of Local States in Glassy Semiconductors of the Selenium-Arsenic System"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 9, Sep 72, pp 1709-1715

Abstract: The authors study the change in photoelectric properties and characteristics of heat-stimulated depolarization with variation in the composition of glassy semiconductors in the selenium-arsenic system. When the concentration of arsenic in the specimen is increased there are changes in the sign of the photorectification effect, the spectral characteristics and kinetics of photoconductivity, the slope of the current-illumination characteristics, and the ratio between low-temperature and high-temperature maxima in the curve for heat-stimulated depolarization. The results are discussed from the standpoint of correlation between composition, structure and parameters of local states.

1/1

USSR

UDC: 533.697

BUZINOV, S. N., GALIULLIN, Z. T., and ~~KARPOVA, N. A.~~

"Nonlinear Problems in Non-Steady State Movement of Liquids and Gases Through Tubes"

Tr. Vses. n.-i. in-t prirod. gazov (Works of the All-Union Scientific Research Institute of Natural Gases) 1970, No. 38/46, pp 149-162 (from RZh-Mekhanika, No. 8, Aug 70, Abstract No. 8B514)

Translation: Solutions of a system of nonlinear differential equations in partial derivatives are considered for the non-steady state movement of fluids in the use of the Leybenzon function in cases where the pressure or outflow in the initial section of the semi-infinite tube varies according to a power law. Some amount of fluid is introduced; this is a problem in "instantaneous source" for the boundary conditions. There is a jump in the outflow, or the outflow varies according to a sine law. The solution is considered for the case in which the daily sinusoidal curve of gas consumption is given, and the power of the last compressor station varies such that all other compressor stations operate in the steady state mode. The effect of the diameter and length of the final section of the tube on variations in the pressure and outflow is investigated. Bibliography of eight. Author's abstract.

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1/2 007 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--PREPARATION OF SIPHON AND LADLE CERAMICS USING ARKALYK CLAYS -U-
AUTHOR--(03)-BRUDETSKIY, G.G., KARPOVA, N.D., VASILTSOV, V.M.
COUNTRY OF INFO--USSR
SOURCE--OGNEUPORY 1970, 35(2), 1-3
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--CLAY, TECHNICAL STANDARD, REFRACTORY MATERIAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1980 STEP NO--UR/0131/70/035/002/0001/0003
CIRC ACCESSION NO--AP0112944
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112944

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ARKALYK CLAYS ARE HETEROGENOUS AL
SUB2 0 SUB3 CONTENT AVS. 42-50PERCENT. THE CLAYS, USED IN THE AMT. OF
33PERCENT FOR PRODUCTION OF SIPHON TUBES, ENSURES REQUIREMENTS OF SOVIET
STD. GOST. AT CONCURRENT BURNING OF SKEWBACK BRICKS IT IS POSSIBLE TO
INCREASE TEMP. 50DEGREES, THUS LOWERING POROSITY OF THE BRICKS 1PERCENT.
FACILITY: CHELYAVINSK MET. ZAVOD, CHELYABINSK, USSR.

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UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ALTERATION OF NATURAL TITANOMAGNETITE AT HIGH PRESSURES AND
TEMPERATURES -U-
AUTHOR--(04)-BAGINA, O.L., KARPOVA, O.V., LIVSHITS, L.D., PETROVA, G.N.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, FIZ. ZEMLI 1970, (2), 103-7
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--IRON ORE, CURIE POINT, THERMAL EFFECT, SOLID SOLUTION,
TITANIUM COMPOUND, ARSENIC MINERAL, COPPER COMPOUND, MAGNETIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/1244

STEP NO--UR/0387/70/000/002/0103/0107

CIRC ACCESSION NO--AP0136655

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136655

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. NATURAL OLIVINITE ASSOC. WITH
TITANOMAGNETITE WAS HEATED AT VARIOUS TEMPS. UP TO 1000DEGREES IN CLOSED
AMPULS IN A NEUTRAL OR A SLIGHTLY REDUCING ENVIRONMENT. THE CURIE
POINTS ARE GIVEN TOGETHER WITH THE FRACTION OF SOLID SOLNS. IN THE
RESULTING PRODUCTS. THE SPECIFIC MAGNETIZATION DEPENDED ON THE AMT. OF
MAGNETITE PRESENT IN THE SOLID SOLNS. FACILITY: INST. FIZ.
ZEMLI, MOSCOW, USSR.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--SYNTHESIS AND PROPERTIES OF TERTIARY MESITYLETHYL PHOSPHINES -U-

AUTHOR--(05)--ILINA, L.K., KARAVANOV, K.V., KARPOVA, YE.N., BOKANOV, A.I.,
STEPANOV, B.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 581-4

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC SYNTHESIS, ORGANIC PHOSPHORUS COMPOUND,
ORGANOMAGNESIUM COMPOUND, OXIDATION, ORGANIC OXIDE, BENZENE DERIVATIVE,
ISOTOPE, ORGANIC NITRO COMPOUND, IMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3002/1069

STEP NO--UR/0079/70/040/003/0581/0584

CIRC ACCESSION NO--AP0128496

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0128496

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MESITYLMAGNESIUM BROMIDE FROM 2.4 G MG AND 12.5 G ET SUB2 PCL MIXED AT MINUS 10DEGREES IN THF AND REFLUXED 0.5 HR GAVE 59PERCENT MESITYLDIETHYLPHOSPHINE (I), B SUB1 100-2DEGREES, D PRIME20 0.959, N PRIME20 SUBD 1.5500; ETHIODIDE M. 132-3DEGREES, WITH NA PICRATE GAVE THE CORRESPONDING PICRATE, M. 78.5-80DEGREES. SIMILARLY ETPCL SUB2 AND RMGBR GAVE 70PERCENT DIMESITYLETHYLPHOSPHINE (II), B SUB1 176-80DEGREES, M. 116-17DEGREES; ETHIODIDE, M. 273-80DEGREES, GAVE THE PICRATE, M. 170-1DEGREES. OXIDN. OF R SUB3 P WITH 4PERCENT H SUB2 O SUB2 GAVE 74PERCENT MESITYLDIETHYLPHOSPHINE OXIDE, B SUB1 150-2DEGREES, 1.040, 1.5480, AND 91PERCENT DIMESITYLETHYLPHOSPHINE OXIDE, M. 143-4DEGREES. I AND P, O SUB2 NC SUB6 H SUB4 N SUB3 IN ET SUB2 O AT 0-5DEGREES, FINALLY AT REFLUX 1 HR, GAVE I P NITROPHENYLIMINE (III), M. 118-19DEGREES; II ANALOG (IV), M. 188-9DEGREES. THE FORMER WAS UNSTABLE IN AIR, THE LATTER STABLE. IN MEND SUB2, III GAVE THE IONIZATION CONST. BY TITRN. (KUROLEV AND STEPANOV, (1968) PKA 15.95, AND COMPARED WITH 14.43 FOR IV, AND 15.72 FOR P, MEC SUB6 H SUB4 PET SUB2:NC SUB6 H SUB4 NO SUB2,P. THE CHEM. SHIFT OF PRIME31 P IN I WAS 19 PPM AND IN TRIMESITYLPHOSPHINE 39. THUS, THE EXCHANGE OF MESITYL FOR ET DOES NOT LEAD TO ANGLE DEFORMATIONS IN R SUB3 P. FACILITY: MOSK. KHIM.-TEKHNOL. INST. IM. MENDELEEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.378:530.145:18

DMITRIYEV, V.G., YEREMEYEV, R.A., YERSHOV, A.G., ITKHOKI, I.YA., KARPOVA, YE.P.

"Engineering Calculation And Optimization Of Parameters Of Optical Band
Frequency Doublers"

Kvantovaya elektronika (Quantum Electronics), Moscow, No 5(11), 1972, pp 72-79

Abstract: At the contemporary level of development of experimental nonlinear optics, the necessity for engineering calculation and optimization of the parameters of frequency doublers is dictated by the appearance of a large number of nonlinear crystals which make it possible to obtain a high efficiency of conversion into the second optical harmonic without special focusing schemes. As a rule, relatively powerful solid-state lasers are used as the sources of initial radiation. The radiation of the lasers introduces a predominately pulse character and the divergence substantially exceeds the diffraction limit. During calculation of frequency doublers of such lasers it is necessary because of the back reaction to take into account both the pulse character of the initial radiation and the effect of saturation of the harmonic. Calculation of the enumerated factors introduces a number of special features in the nature of the calculation of the efficiency of conversion, such as determination of the optimum ratio

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USSR

DMITRIYEV, V. G., et al., Kvantovaya elektronika, No 5(11), 1972, pp 72-79

between the intensity of the exciting wave and the length of the nonlinear crystal, and others. The methods of calculation used in the present work were developed by others for the case of a prescribed field of initial frequency, and for a substantially nonlinear regime. For production of engineering graphs it is most advisable to conduct numerical integration of equations because analytical methods of calculation, valid in some approximations, lead to fairly awkward solutions. 5 fig. 1 tab. 11 ref. Received by editors, 6 Oct 1971.

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1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--IMPROVEMENT IN PRODUCTION TECHNOLOGY OF DEFLUORINATED PHOSPHATE -U-
AUTHOR-(02)-~~KARPOVICH~~, E.A., GILLER, M.YE. *K*
COUNTRY OF INFO--USSR
SOURCE--KHIM. PROM. UKR. 1970, (2), 44-6
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--PHOSPHATE, FLUORINE COMPOUND, INDUSTRIAL FURNACE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0016 STEP NO--UR/0436/70/000/002/0044/0046
CIRC ACCESSION NO--AP0119012
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119012

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN A SERIES OF EXPTS. UNDER INDUSTRIAL CONDITIONS IN FURNACES OF 100 M LENGTH AND 3.2 M DIAM. AT 1220-40DEGREES AND WITH AN OUPUT CAPACITY OF 3.1-3.8 TONS-HR THE OPTIMAL CONDITIONS FOR A COMPLETE DEFLUORINATION OF APATITE CONCNS. WERE ADDN. OF 3.2-3.8PERCENT SiO_2 AND 1.3-1.7PERCENT P_2O_5 IN THE FORM OF 20PERCENT PHOSPHORIC ACID. FACILITY: SUM. KHIM. KOMB, SUMY, USSR.

UNCLASSIFIED

USSR

UDC 621.382.323-416:546.48'231

KARPOVICH, L. A., TIKHOV, S. V.

"Relaxation Phenomena in Film Field Triodes caused by Migration Ion Polarization in the Dielectric Film"

Moscow, Radiotekhnika i elektronika, Vol XVII, No 2, 1972, pp 381-385

Abstract: A study was made of the increasing relaxation of the field effect in film field triodes based on CdSe films caused by the phenomenon of migration ion polarization in the SiO_x and GeO_x dielectric films. A number of laws characterizing the relation of the relaxation time to the temperature and magnitude of the polarizing voltage were established. The values of the activation energy, concentration and mobility of the migrating ions were determined, and their nature was established.

The fact that high temperature polarization is determined by migration of Na ions in the dielectric films is indicated in that this phenomenon is observed only in structures with activated CdSe films and it disappears if NaCl is excluded from the activating powder. Strong asymmetry of the $\sigma(t)$ function during high temperature polarization arises from the fact that the Na ions are concentrated near the interface of the dielectric and semiconductor. The activation energy of high temperature polarization $E_T^0 \approx 1.4-1.5$ electron
1/2

USSR

KARPOVICH, I. A., et al., Radiotekhnika i elektronika, Vol XVII, No 2, 1972,
pp 381-385

volts agrees well with the activation energy of Na ions in thermally grown
SiO₂ films.

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USSR

UDC 621.383.51:535.215.6

ANSHON, A.V., KARPOVICH, I.A., PERSHIN, YU.M.

"Effect Of Internal Shunting Resistance On The Characteristics Of Film Photo-detectors With A CdS--Cu₂S Heterojunction"

Elektron. tekhnika. Nauchno-tekhn.sb. Elektronoluch. i Fotoelektr. pribory
(Electronic Technology. Scientific-Technical Collection. Electron Beam And Photoelectric Devices), 1970, Issue 2(16), pp 32-35 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 48329)

Translation: It is shown that the unusually small response of film photo-detectors with a CdS--Cu₂S heterojunction in an open circuit regime at low illumination ($E < 100$ lux) is connected with the presence of shunting trans-
ition resistance. The dependences are obtained of the shunt resistance on the temperature and illumination, from which it follows that the shunt consists of two series connected resistances, one of which has metallic characteristics and the other semiconductor. As a result of consideration of the construction of photodetectors, a conclusion is given on the nature of the constituents of the shunt. 3 ill. 2 ref. Author's abstract.

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1/2 038 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--INFLUENCE OF SURFACE DOPING ON THE SURFACE POTENTIAL AND SURFACE
CONDUCTIVITY OF CADMIUM SELENIDE FILMS -U-
AUTHOR-(02)-KALININ, A.N., KARPOVICH, I.A. K
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1490-5
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--SEMICONDUCTOR MATERIAL, ELECTRODE POTENTIAL, SURFACE PROPERTY,
ALUMINUM, METAL COATING, INDIUM, CADMIUM, COPPER, SILVER, POTASSIUM
CHLORIDE, BROMIDE, IODIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/0172 STEP NO--UR/0181/70/012/005/1490/1495
CIRC ACCESSION NO--AP0129428
UNCLASSIFIED

2/2 038

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0129428

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD IS DESCRIBED FOR THE INVESTIGATION OF VARIATIONS OF THE SURFACE POTENTIAL, V_{SUBS} , AND SURFACE COND. Σ_{SUBS} , IN THE PROCESS OF CONTROLLED DEPOSITION ON THE SURFACE OF A SEMICONDUCTOR OF AN IMPURITY AT SURFACE CONCNS., N_{SUBS} IS SIMILAR TO $10 \text{ PRIME}^{12} \text{ MINUS } 10 \text{ PRIME}^{15} \text{ CM PRIME}^2$. DATA ARE GIVEN ON THE KINETICS OF THE VARIATION OF V_{SUBS} AND Σ_{SUBS} OF SINGLE CRYSTAL CDSE FILMS IN THE PROCESS OF DOPING WITH SOME METALS (IN, AL, CD, CU, AG) AND IONIC COMPODS. (KCL, KBR, KI, CDI SUB2). IN THE CASE OF METALS, THE EFFECT OF DOPING IS DETD. BY INTERACTION OF METAL ATOMS WITH PHYS. AND CHEM. ADSORBED O AND IS REVERSIBLE. IONIC COMPODS, DO NOT AFFECT Σ_{SUBS} AND PRODUCE IRRVERSIBLE VARIATIONS OF V_{SUBS} RELATED TO THE APPEARANCE OF THE DIPOLE JUMP IN THE POTENTIAL. FACILITY:
GOR'K. GOS. UNIV. IM. LOBACHEVSKOGO, GORKI, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--EFFECT OF EXTERNAL VOLTAGE ON HIGH VOLTAGE PHOTOELECTROMOTIVE FORCE
ON LEAD SULFIDE LAYERS -U-
AUTHOR-(02)-SHILOVA, M.V., KARPOVICH, I.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(2), 129-30

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--LEAD SULFIDE, PHOTOELECTROMOTIVE FORCE, VOLT AMPERE
CHARACTERISTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1999/1644

STEP NO--UR/0139/70/013/002/0129/0130

CIRC ACCESSION NO--AT0123482

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0123482

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A LINEAR INCREASE IN PHOTO EMF. (DELTA V) WAS OBTAINED WITH INCREASES IN APPLIED EXTERNAL VOLTAGE. THE KINETICS OF DELTA V DECREASE AFTER VOLTAGE REMOVAL WAS LOGARITHMIC. DELTA V IS THE RESULT OF IONIC MIGRATION UNDER THE ACTION OF THE APPLIED EXTERNAL VOLTAGE. FACILITY: GOR'K. ISSLED. FIZ.-TEKH. INST., GORKI, USSR.

UNCLASSIFIED

USSR

UDC 616.988.25-092.9-072

USEBAYEVA, G. K., KARPOVICH, L. G., and LEVKOVICH, Ye. N., Institute of Poliomyelitis and Virus Encephalitides, Academy of Medical Sciences USSR

"Characteristics of the Pathogenesis of Infection in Mice Caused by Virulent and Attenuated Variants of Tickborne Encephalitis Virus and Langat Virus"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 70, pp 482-488

Abstract: Experiments on white mice showed that the TR-21 strain of langat virus and its attenuated variant TP-21-237, and the attenuated PAN-114 variant of tick-borne encephalitis virus are peculiar with respect to the pathogenetic characteristics of the infection that they produce in animals. These viruses possess genetically stable markers, notably mNsc⁻ and II⁺, and thus differ from the virulent "wild" TBE virus. The TP-21 strain, its TP-21-237 variant, and the Pan-114 variant of TBE virus, which possess mNsc⁺, mNsc⁻, and II⁺ or II⁻ markers, are less active than the virulent Pan strain, multiply for a shorter period of time in such organs as the lymph nodes and intestine, are absent in infectious form in the brain and spinal cord, and exhibit a low level of viremia. Subcutaneous inoculation of mice with the attenuated Pan-114 and T-21-237 variants results in a latent infection.

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USSR

UDC: 51:621.391

YEROSH, I. L., KARPOVSKIY, M. G.

"Correction of Errors in Arithmetic Devices Based on Elements With Many Stable States"

V sb. Teor. kibernetika. Vyp. 2 (Theoretical Cybernetics--collection of works, No 2), Kiev, 1970, pp 78-79 (from RZh-Kibernetika, No 1, Jan 71, Abstract No 1V414)

Translation: The authors consider classes of q -nary codes which detect and correct arithmetic errors in different channels. Conditions are formulated for the existence of AN codes which correct isolated errors of varying depth in symmetric and asymmetric arithmetic channels, where the depth of an error

$e, e = \sum_{i=0}^{n-1} h_i q^i$, in the i -th digital place is understood to mean the quantity h_i .

A method is proposed for selecting a code which corrects isolated errors of arbitrary depth in arithmetic devices which utilize the decimal system of notation, where the individual units are based on binary elements. It is asserted that in a q -nary assymmetric arithmetic channel, the number A of

form $A = \frac{q^{t+1} - 1}{q - 1}$ generates a code with detection of t -tuple independent errors

YEROSH, I. L., KARPOVSKIY, M. G., Teor. kibernetika, Vyp. 2, Kiev, 1970,
pp 78-79

of arbitrary depth. Conditions are given for finding codes which detect and correct bundles of errors. In conclusion, estimates are given for the effectiveness of the proposed codes. V. Dyn'kin.

1/2 008 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--TESTS FOR UNDIRECTED GRAPHS -U-
AUTHOR--(C3)-DANILCV, V.V., KARPOVSKIY, M.G., MOSKALEV, YE.S.
COUNTRY OF INFO--USSR
SOURCE--AVTOMATIKA I TELEMEXHANIKA, 1970, NR 4, PP 160-168
DATE PUBLISHED-----70
SUBJECT AREAS--MATHEMATICAL SCIENCES
TOPIC TAGS--GRAPH THEORY, TEST
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0603 STEP NO--UR/0103/70/000/004/0160/0168
CIRC ACCESSION NO--AP0121272
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0121272

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERE IS SUGGESTED A METHOD OF DETERMINING THE MINIMAL TESTS FOR CHECKING THE EFFICIENCY AND THE DIAGNOSTICS OF THE FAILURES OF ARBITRARY MULTIPLICITY IN UNDIRECTED GRAPHS BY MEANS OF THE METHOD OF BRANCHES AND BOUNDARIES. THERE ARE GIVEN THE LOWER AND THE UPPER ESTIMATIONS OF THE NUMBER OF TEST SETS TO CHECK THE EFFICIENCY AND THE DIAGNOSTICS OF FAILURES IN UNDIRECTED GRAPHS.

UNCLASSIFIED

USSR

KARPUK, A. A. (Institute of Mathematics, Belorussian Academy of Sciences)

"Diffraction of the Radiation Field of a Horizontal Dipole by a Circular Opening in a Flat Screen with a Circular Disc Aligned Axially with It"

Minsk, Differentsial'nyye Uravneniya; October, 1972; pp 1805-15

ABSTRACT: The author solves the problem of the diffraction of a radiation field of a horizontal magnetic dipole by a circular opening in an ideally conducting, infinite flat screen with an ideally conducting, circular disc aligned axially with it. It is assumed that the dipole is on the common axis of the disc and screen with the opening. The solution is based on a method of separation of variables in the coordinates of an oblate spheroid.

Cases of different positions of the dipole on the diffracting axis are considered. Formulas for studying the behavior of the field in a wave region are derived.

The article includes 1 illustration. There are 11 references.

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UDC 517.951

USSR

IVANOV, Ye. A., KARPUK, A. A., Belorussian State University imeni V. I. Lenin,
Institute of Mathematics of the Academy of Sciences Belorussian SSR

"Problem of the Diffraction of the Radiation Field of a Shifted Magnetic Dipole
in Two Coaxial Circular Discs. I"

Minsk, Differentsial'nyye Uravneniya, No. 5, May 71, pp 892-901

Abstract: The ideas used in a previous article by one of the authors (Ivanov) concerning the rigorous solution of the general problem of an ideally conducting circular disc located in the radiation field of an elementary oscillatory magnetic dipole located at an arbitrary point in space at a finite distance from the disc with a moment oriented at a certain angle to the axis of the disc are applied in this problem to the case of two circular discs of different radii, irradiated initially by the radiation field \vec{E}^0, \vec{H}^0 of a magnetic dipole of arbitrary orientation displaced from the axis of the discs. A mathematical formulation of the boundary value problems corresponding to given orientations of the dipole moment is given, and then a method is described for obtaining a rigorous solution of them. Two cases are studied:
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USSR

pp 892-901

the case in which the dipole moment is directed perpendicular to the axis of the discs (horizontal dipole), and the case in which it is parallel to the axis (vertical dipole). The re-emitted electromagnetic field is sought in the form

$$\vec{H} = -ik_0 \text{rot } \vec{\Pi} + \text{grad div } \vec{\Pi} + k^2 \vec{\Pi},$$

where the electric and magnetic vectors are sought in the form of expansions in terms of spheroidal wave functions. The coefficients for these functions are obtained with an infinite system of linear equations. The formulas derived can be used to investigate the behavior of the total field in the wave zone.

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1/2 013 UNCLASSIFIED PROCESSING DATE--02JCT70
TITLE--EXPERIMENTAL SUBSTANTIATION OF AEROSOL METHOD OF DISINFECTION IN
VIRAL INFECTIONS, INACTIVATING ACTION OF HYDROGEN PEROXIDE, CHLORAMINE
AUTHOR--(02)-SLOBODENYUK, V.K., KARPUKHIN, G.I.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970 NR 3,
PP 113-117
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ADENOVIRUS, POLIOMYELITIS VIRUS, COXSACKIE VIRUS, HYDROGEN
PEROXIDE, AEROSOL, CHLORAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY KEEL/FAME--1990/1719

STEP NO--UR/0016/70/000/003/0113/0117

CIRC ACCESSION NO--AP0109684

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0109684

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS PRESENT THE RESULTS OF STUDYING THE INACTIVATING ACTION OF HYDROGEN PEROXIDE, CHLORAMINE AND HEXYLRESORCINE AEROSOLS ON ADENOVIRUS TYPE 3, POLIOMYELITIS VIRUS, TYPE III, COXSACKIE VIRUS, TYPE 1, IN THE AIR AND ON THE SURFACES. THE ACTION OF DISINFECTANTS WAS COMPARED BY THE AFFECT OF INACTIVATION, PROVIDING THE DEATH OF 99.9PERCENT OF THE VIRUSES WITHIN THE PERIOD OF 30 MINUTES. CONCENTRATION OF DISINFECTANTS PRODUCING EFFECTIVE INACTIVATION OF VIRUSES IN THE AIR WERE COMPARED WITH THE RECOMMENDED MAXIMAL ADMISSIBLE ONES. THE FOLLOWING PROVED TO BE THE MINIMAL DOSES WHICH INACTIVATED 99.9PERCENT OF THE POLIOVIRUS AND COXSACKIE VIRUS IN THE AIR AFTER EXPOSURE NOT EXCEEDING 30 MINUTES: OF HYDROGEN PEROXIDE, 20, CHLORAMINE, 10, AND HEXYLRESORCINE, 5 MG-M PRIME3, 99.9PERCENT OF ADENOVIRUSES WERE INACTIVATED BY 10, 5 AND 5 MG-M PRIME3 OF THE MENTIONED DISINFECTANTS. THE MINIMAL EFFECTIVE DOSES OF THE DISINFECTANTS WHICH INACTIVATED 99.9PERCENT OF THE VIRUSES ON THE SURFACE WERE GREATER THAN THOSE REQUIRED FOR INACTIVATION IN THE AIR; THEY VARIED IN RELATION TO THE TYPE OF THE VIRUS WITHIN THE FOLLOWING RANGE: FOR HYDROGEN PEROXIDE, FROM 40 TO 60, FOR CHLORAMINE, FROM 10 TO 15, AND FOR HEXYLRESORCINE, FROM 5 TO 10 MG-M PRIME3.

UNCLASSIFIED

USSR

UDC: 616.988-084.48

SLOBODENYUK, V.K. and KARPUKHIN, G.I., Sverdlovsk Institute of Viral Infections

"Experimental Substantiation of the Aerosol Method of Disinfection in Viral Infections. II. Inactivation of Different Viruses in the Air and on Environmental Surfaces Using Aerosols of Hydrogen Peroxide, Chloramine, and Hexylresorcin"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 3, 1970, pp 113-117

Abstract: The three disinfectants tested had a marked viricidal effect in comparatively low concentrations. The lowest doses that inactivated 99.9% of poliomyelitis type 3 and Coxsackie B type I viruses in the air after exposure of no more than 30 min were 20 mg/m³ of hydrogen peroxide, 10 mg/m³ of chloramine, and 5 mg/m³ of hexylresorcin. Under the same experimental conditions, 99.9% of type 3 adenovirus was inactivated by 10 mg/m³ of hydrogen peroxide, 5 mg/m³ of chloramine, and 5 mg/m³ of hexylresorcin. The lowest disinfectant doses inactivating 99.9% of viruses on environmental surfaces (wood, polyvinyl chloride, and glass) in the experimental chamber were higher than those required in the air. Depending on the type of virus, doses were from 40-60 mg/m³ of hydrogen peroxide, 10-15 mg/m³ of chloramine, and 5-10 mg/m³ of hexylresorcin.

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1/2 020 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--"UNIVERSAL KEYED INSTRUMENT KUU ALGOL" -U-

AUTHOR--(02)-KARPUKHIN, G.P., YEGOROV, V.S.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, MEKHAIZATISIYA I AVTOMATIZATSIYA PROIZVODSTVA, NO 1,
1970, PP 35-36

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--DIGITAL COMPUTER, PUNCHED CARD, AUTOMATIC COMPUTER
PROGRAMMING, ALGORITHMIC LANGUAGE, BINARY CODE, ELECTROMAGNETIC
PULSE/(U)KUU ALGOL DIGITAL COMPUTER, (U)ALGOL60 LANGUAGE, (U)URAL
DIGITAL COMPUTER, (U)M20 DIGITAL COMPUTER, (U)BESM2 DIGITAL COMPUTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1985/0243

STEP NO--UR/0118/70/000/001/0035/0036

CIRC ACCESSION NO--AP0100764

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UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100764

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FUNCTION OF THE KUU ALGOL IS THE ACCUMULATION AND AUTOMATIC CODING OF INPUT LANGUAGE SYMBOLS ON THE BASIS OF THE ALGORITHMIC LANGUAGE ALGOL 60 SUPPLEMENTED BY THE RUSSIAN AND GREEK ALPHABETS AS WELL AS BY IDENTIFIERS OF STANDARD FUNCTIONS AND THE NINE DIGIT BINARY CODE. IT ALSO PUTS THEM, IN THE FORM OF ELECTRICAL PULSES, INTO THE INPUT PERFORATOR AND THEN ON PERFORATED CARDS. THESE LATTER ARE THE CARDS IN THE INPUT PERFORATOR OF THE ELECTRONIC DIGITAL COMPUTER WITH WHICH THE KUU ALGOL WORKS. THE BLOCK DIAGRAM OF THE KUU ALGOL IS GIVEN AND IS ACCOMPANIED BY A VERBAL EXPLANATION OF THE FUNCTIONS OF EACH BLOCK. THE INFORMATION TO BE TRANSFERRED TO THE PERFORATED CARD IS ACQUIRED BY PRESSING KEYS ON THE FRONT PANEL SWITCHBOARD, SHOWN IN A PHOTOGRAPH, BEARING THE ENGRAVED SYMBOLS OF THE ALGOL 60 LANGUAGE. WEIGHING 30 KG AND MEASURING 590 TIMES 430 TIMES 235 MM, THE INSTRUMENT IS CAPABLE OF WORKING WITH UNIVERSAL DIGITAL COMPUTERS OF THE "URALQ" M-20, AND BESH 2 TYPES.

UNCLASSIFIED

USSR

UDC 535.37 + 541.64

ANISIMOV, V. M., FILLIPS, D., KARPUKHIN, O. N., and SHELYAPINTOKH, V. YA., Institute of Chemical Physics, Academy of Sciences, USSR

"Chemiluminescence and Energy Transfer in Polymers"

Moscow, Izvestiya Akademii Nauk, Seriya Khimicheskaya, No 7, Jul 70, pp 1529-1535

Abstract: A study is reported on the quantitative investigation of chemical and physical mechanism of luminescence, the processes responsible for this phenomenon, on the identification of the emitter, etc. This phenomenon was studied on the example of decomposition of dicyclohexylperoxydicarbonate (DPD) in poly-2,2-propane-bis-4-phenyl-carbonate, polystyrene and polymethylmetacrylate. Chemiluminescence is the result of the formation of triplet excited cyclohexane molecules during the recombination of radicals forming in thermal decomposition of DPD. The radii of energy transfer from the excited cyclohexanone molecule to the molecules of anthracene, dibromoanthracene, rhodamine 6Zh, and benzyl in polystyrene and polycarbonate were determined. They differed from the values obtained on the basis of Forster theory. This may be due to unevenly distributed impurities in the polymer, or to the differences in mechanism of the transfer processes studied.

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1/2 023 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--COMPETITION OF TRIPLET TRIPLET AND TRIPLET SINGLET ENERGY TRANSFER
IN A POLYMER -U-
AUTHOR-(04)-ANISIMOV, V.M., BURSHTYEN, K., BOGOYAVLENSKAYA, YE.,
KARPUKHIN, O.N.
COUNTRY OF INFO--USSR
SOURCE--OPT. SPEKTROSK. 1970, 28(4), 814
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--POLYCARBONATE, BROMINATED ORGANIC COMPOUND, ANTHRACENE,
CHEMICAL DECOMPOSITION, CYCLOHEXANONE, ELECTRON TRIPLET STATE, POLYMER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/0872 STEP NO--UR/0051/70/028/004/0814/0814
CIRC ACCESSION NO--AP0134601
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134601

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT, DICYCLOHEXYL PEROXYDICARBONATE
MOLS., WHICH YIELD ON DECOMPN. CYCLOHEXANONE IN THE TRIPLET STATE, WERE
USED TO EXAMINE THE TRIPLET TRIPLET (T-T) AND TRIPLET SINGLET (T-S)
ENERGY TRANSFER IN A POLYCARBONATE IN THE PRESENCE OF BENZIL TRIPLET
ACCEPTOR) AND 9,10 DIBROMOANTHRACENE (SINGLET ACCEPTOR), (A., 1969).
THE T-T ENERGY TRANSFER RATE EXCEEDED THE T-S RATE, WHICH WAS CONSISTENT
WITH EARLIER RESULTS (V. L. ERMOLAEV, 1963).

UNCLASSIFIED

USSR

UDC 533.92:621.039.61

ZUKOV, V. G., KARPUKHIN, V. I., RUDNEV, N. I., TOLOK, V. G.

"Study of the Stability of a Plasma Jet in the Magnetic Field of a Divertor"

Fiz. plazmy i probl. upravl. termoyader. sinteza. Resp. mezhved. sb.
(Plasma Physics and Problems of the Controlled Thermonuclear Fusion.
Republic Interdepartmental Collection), 1972, No. 3, pp 213-220 (from
RZh-Fizika, No 11, Nov 72, Abstract No 11G296)

Translation: The stability of plasma motion in the magnetic field of a divertor was studied. Observations with the aid of a plasmascope and measurements of radioelectrical fields in the plasma showed that the instability of the rotating plasma occurring in the longitudinal magnetic field of the solenoid is effectively stabilized by the divertor magnetic field.

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USSR

UDC: 533.92:621.039.61

ZYKOV, V. G., KARPUKHIN, V. I., LONIN, Yu. F., RUDNEV, N. I., TOLOK, V. T.,
Physicotechnical Institute of the Academy of Sciences of the UkrSSR, Khar'kov

"Investigation of Plasma Containment in the Magnetic Field of a Racetrack
With Diverter"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 5, May 72, pp 939-945

Abstract: An experimental study is made of the time of containment of plasma particles in a racetrack with a diverter. The trap was filled with plasma by injection from a coaxial source through magnetic slits in the diverter. It was found that the diverter configuration ensures plasma equilibrium in a toroidal magnetic field without rotational transformation of the lines of force of the magnetic field. Two traps can be distinguished in the system: a corkscrew trap in the diverter, and a toroidal trap. The particles drift more rapidly in the diverter magnetic field because of plasma drift in the magnetic slits. The lifetime of the plasma in the diverter τ_1 is independent of the magnetic field H . In the toroidal magnetic field the lifetime $\tau_2 \sim H$, losses being due both to drift in the diverter and the development of instabilities. Since in this experiment a classical diverter with a continuous metal barrier between the central coil and the wall of the

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USSR

ZYKOV, V. G., et al., Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 5, May 72,
pp 939-945

chamber was used, all charged particles which drift into the magnetic
slits of the diverter are neutralized by this barrier. To reduce plasma
losses in the diverter, the central diverter coil should be held by local
supports with a minimum cross sectional area. Plasma losses on the toroidal
sections can be reduced by increasing the number of diverter cells.

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USSR

UDC 621.374.325.001

KREMER, I.YA., ~~KARHIKHIN, Vyach. I.~~ [Members, Scientific-Technical Society Of Radio Engineering, Electronics, And Communications imeni A.S. Popov]

"Measurement Of Nonenergy Parameter Of Radio Signal With A High Level Of Additive And Modulating Noise"

Radiotekhnika, Vol 27, No 6, June 1972, pp 11-15

Abstract: A method is considered for determining the probability of accurate measurement and of false readouts of a discrete nonenergy parameter (time of arrival, frequency) at a high level of additive and modulating noise. An example of the use of the method is presented. 2 fig. 6 ref. Received, 23 June 1970; after abridgement, 27 October 1971.

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USSR

UDC 621.374.325.001

KARPUKHIN, VI. I. [Member, Scientific-Technical Society Of Radio Engineering, Electronics, And Communication imeni A.S. Popov]

"Concerning The Effect In A Feedback Circuit Of The Nonlinearity Of A Comb Filter Of The Recirculation Type"

Radiotekhnika, Vol 27, No 4, 1972, pp 51-56

Abstract: A comb filter with a positive delayed feedback, an unrestricted passband of the recirculation ring, and the nonlinear characteristic of an open feedback circuit are considered. A theorem concerning the enveloping packet of pulses at the output of a linear comb filter is extended to a nonlinear filter. The results obtained have a very general character and pertain not only to the comb filter considered with linear delay but also to synchronous storage devices of other types where a storage tube, magnetic barrier, an indicator with persistence, etc., are used. Examples are presented. 5 ill. 4 ref. Received, 15 May 1970.

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NUCLEAR SCI. ABST.

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3334 (NP-tr-1859) INTERACTION OF PLASMA FLUXES
WITH THE PLASMA CYLINDER IN THE MAGNETIC FIELD OF
THE DIVERTOR. Zykov, V. G.; Karoukhin, V. I.; Rudnev,
N. I.; Tolok, V. T. (Akademiya Nauk Ukrainskoi SSR, Kharkov,
Fiziko-Tekhnicheskii Institut). Translated for Culham Lab.,
Abingdon, Eng., from report FTI-169. 10p. (CTO-657). Dep.
CFSTI (U. S. Sales Only).

The penetration of the plasma fluxes across the divertor mag-
netic field into the hollow plasma cylinder formed near the di-
vertor surface from the injected plasma, is investigated with
electric probes, a plasmascope, and a Thomson mass spectro-
graph. It is shown that the leading portions of the plasma fluxes
enter the divertor aperture. The tail ends are retarded at the
periphery because of their polarization at the plasma cylinder.
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USSR

UDC 533.0

K
ZYKOV, V. G., KARPUKHIN, V. I., RUDNEV, N. I., TOLOK, V. T., Physicotechnical
Institute, Academy of Sciences, Ukrainian SSR, Khar'kov

"Investigation of the Motion Stability of a Plasma Stream in the Magnetic Field
of a Diverter"

Kiev, Ukrainskiy Fizicheskii Zhurnal, Vol 15, No 7, July 1970, pp 1135-1141

Abstract: Research has shown that the plasma in a longitudinal magnetic field is in a state of unstable equilibrium. Placing a diverter on a straight-line sector of the racetrack brings about considerable changes in the topology of the magnetic field of the track. The article deals with an experimental investigation of the motion stability of the plasma stream in the magnetic field of the diverter, which is an important unity of a race-track stellarator. It is shown that the magnetic field of the diverter is effective in stabilizing plasma motion in a longitudinal magnetic field.

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1/2 036 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--MOVEMENT OF AN IONIZATION FRONT IN AN ARGON CESIUM PLASMA IN A
MAGNETIC FIELD -U-
AUTHOR--(02)-KARPUKHIN, V.T., NEDOSPASOV, A.V. *K*
COUNTRY OF INFO--USSR
SOURCE--TEPLOFIZ. VYS. TEMP. 1970, 8(2), 266-71
DATE PUBLISHED--70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--ARGON, CESIUM, MAGNETIC FIELD EFFECT, PLASMA PHYSICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/1409 STEP NO--UR/0294/70/008/002/0266/0271
CIRC ACCESSION NO--AP0133361

UNCLASSIFIED

2/2 036

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133361

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VELOCITY OF THE MOVEMENT OF THE IONIZATION FRONT WAS MEASURED FOR AN AR PLASMA (AR PRESSURE 100 TORR, CS PRESSURE 5.5 TIMES 10⁻² PRIME NEGATIVE 2 TORR) IN A PULSED DISCHARGE TUBE, SIMULTANEOUSLY PARALLEL (V IS PARALLEL TO) AND PERPENDICULAR (V IS PERPENDICULAR TO) TO THE MAGNETIC FIELD. THE MOVEMENT OF THE PLASMA BOUNDARY WAS CONSIDERED AT DIFFERENT MUTUAL ELEC. AND MAGNETIC FIELD ORIENTATIONS. THE VELOCITY WAS MEASURED PHOTOGRAPHICALLY. AT SMALL MAGNETIC FIELDS, THE VELOCITY V IS PERPENDICULAR TO OF THE FRONT DECREASES WITH THE INCREASE OF THE PRODUCT ΩE , ELECTRON CYCLOTRON FREQUENCY AND MEAN FREE FLIGHT TIME. THE APPEARANCE OF THE IONIZATION INSTABILITY MANIFESTS ITSELF WITH A STEPWISE INCREASE OF V IS PERPENDICULAR. THIS VALUE OF V IS PERPENDICULAR DEPENDS ON THE SIGN OF THE MAGNETIC FIELD. THE VELOCITY ANISOTROPY CAN BE EXPLAINED BY ADDNL. HEAT RELEASE BY SHORT CIRCUITED HALL CURRENTS NEAR THE MOVING PLASMA BOUNDARY. PLOTS OF V IS PARALLEL AND V SUB 1 ARE SHOWN. FACILITY: INST. AT. ENERG. IM. KURCHATOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 612.08

KARPUKHINA, A. M., RYABININ, A. D., and RYABININ, V. A., Kiev

"An Amplitude Discriminator with Variable Discrimination Levels"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 12, 1972, pp 1878-1881

Abstract: Employed for amplitude discrimination of neuron group pulses, the new discriminator is an improvement over the ABIS-10 in that the amplitude to be recorded (x) and the amplitude range (Δx) can be adjusted. x can vary from 0 to 70 v, and Δx from 0 to $-x/2$. The discriminator can operate independently or with a Dnepri digital computer for pulse activity analysis. The output pulse is standard for computer input, can be recorded on an oscillograph, and can be transformed into sound signals. Pulses of single neurons of a group can be isolated by employing several discriminators simultaneously or by feeding the tape-recorded signals of the group one at a time through a single discriminator. The device operates on the basis of two channels defining the upper and lower thresholds of amplitude sensitivity. A circuit diagram of the discriminator and a sample output oscillogram are provided.

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KARPUKHINA, A. M.

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USSR

KARPUKHINA, A. M., *Kibernicheskoye Aspekty y Imennoy Naboly Mozga*, Nauka Publishing House, 1970, pp 119-127

basis. The final effect of the respiratory system is examined as the result of the integration of cellular elements having different types of activity and different functional properties.

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Abstract: In this article an attempt is made to approach the study of the respiratory system from a functional perspective, viewing it as a dynamic functional system of the organism with the characteristics of self-regulation.

With the help of microelectrode techniques, systematic research was carried out on the electrical activity of individual respiratory neurons of the lateral group of the reticular formation of the medulla oblongata of a cat during spontaneous breathing. Four types of neurons were distinguished, and their activity was consistently and strictly correlated with phases of the respiratory cycle. An analysis was made of the localization of respiratory neurons having different types of activity. Respiratory neurons are distributed in clusters, and two clusters may include neurons having different types of activity. The existence of functionally isolated "respiratory units" made up of neurons with a single type of activity can be contradicted on this

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SO: FOREIGN

UDD 612.215 : 611--018.02

Paris, Diction

28 Oct 1971

KARPUKHINA, A. M., *The Problem of the Neuron Organization of the Central Mechanism of the Functional Respiratory System*

KARPUKHINA, A. M.

COLSEN

29 Oct 71

115

FED: CYBERNETICS

107. USSR

UDC 612.833.2 : 612.823.5

KARPUKHINA, A. M. and PONOMAREVA, I. D.

SO: FOREIGN PRESS DIGEST

29 OCT. 1991

"An Analysis of the Interneuron Connections of the Respiratory Center"

Kiberneticheskiye Aspekty v Izuchenii Raboty Mozga (Cybernetic Aspects of the Study of the Brain's Functioning), Moscow, Nauka Publishing House, 1970, pp 192-197

Abstract: The respiratory center is the central mechanism of one of the most important self-regulating systems of the organism. Clarification of the organization of this mechanism, of the logical and functional interactions between its individual functional elements, is one of the urgent problems of biocybernetics and contemporary physiology.

In order to analyze the interneuron relationships of the respiratory center, a logical-probabilistic method was used. This made it possible to determine both the nature (excitatory or inhibitory) and the importance of the connections between neurons. The method is applicable to the analysis of two or more active units.

Between respiratory neurons having different types of activity, specific interrelationships have been established, reflecting their different functional significance in the procedure of information processing in a functional respiration system.

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1/2 013 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--PARTICIPATION OF INHIBITOR RADICALS IN CHAIN PROPAGATION DURING
ETHYLBENZENE OXIDATION IN THE PRESENCE OF N-PHENYL BETA NAPHTHYLAMINE
AUTHOR--(04)-KARPUKHINA, G.V., MAYZUS, Z.K., MESKINA, M.YA., EMANUEL, N.M.
COUNTRY OF INFO--USSR
SOURCE--Zh. Fiz. Khim. 1970, 44(6), 1377-82
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ETHYLBENZENE, OXIDATION, AROMATIC AMINE, ALKYLPHENOL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO--F070/605012/F07 STEP NO--UR/0076/70/044/006/1377/1382
CIRC ACCESSION NO--R00140337

2/2 013

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0140337

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE INHIBITORY ACTIVITY OF N-PHENYL BETA NAPHTHYLAMINE (I) IN THE OXIDN. OF PHET AT 60DEGREES DECREASED WITH INCREASING I CONCN. THE CONCN. OF PEROXY RADICALS IN THE REACTION MIXT. BECAME GREATER THAN THE VALUE CALCD. FROM THE RATES OF RADICAL INITIATION, AND OF REACTION OF PEROXY RADICALS WITH INHIBITOR, OR FROM THE CONCN. OF THE INHIBITOR. THIS WAS DUE TO THE GENERATION OF ADDNL. PEROXY RADICALS BY THE REACTION OF PHET WITH RADICALS DERIVED FROM I. UPON INTRODUCTION OF 2,6-DI-TERT-BUTYLPHENOL, WHICH REACTED WITH THE AMINE RADICALS, THE RATE OF THE SIDE REACTION DECREASED, AND THE CONCN. OF PEROXY RADICALS APPROACHED THE CALCD. VALUE.
FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ELECTRON PARAMAGNETIC RESONANCE STUDY OF CATION EXCHANGERS -U-

AUTHOR--(04)--KARPUKHINA, T.A., KISELEVA, YE.D., CHMUTOV, K.V., GLAZUNOV,
M.P.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(4), 1003-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY, PHYSICS

TOPIC TAGS--ION EXCHANGE RESIN, FORMALDEHYDE, ANTHRACENE, ORGANIC AZOLE
COMPOUND, PHENANTHRENE, GAMMA RADIATION, ELECTRON PARAMAGNETIC
RESONANCE, PHOTOLYSIS, CONJUGATE BOND SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3007/0777

STEP NO--UR/0076/70/044/004/1003/1007

CIRC ACCESSION NO--AP0136214

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136214

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE REACTION OF HCHO WITH ANTHRACENE, PHENANTHRENE, CARBAZOLE, OR ACENAPHTHENE, FOLLOWED BY SULFONATION GAVE ION EXCHANGE RESINS CONTG. LARGE CONJUGATED SYSTEMS. THESE RESINS WERE VERY STABLE TOWARDS GAMMA IRRADN. EPR SPECTRA OF THE RESINS AND THEIR PHOTODEGRADATION PRODUCTS ARE DISCUSSED.
FACILITY: INST. FIZ. KHIM., MOSCOW, USSR.

UNCLASSIFIED

1/2 009
TITLE--NEUTRONACTIVATION SURVEY, THE METHOD OF APATITE AND OTHER FLUORINE
BEARING MINERALIZATION DISCOVERY ON THE FLUORINE DISPERSION HALOES -U-
AUTHOR--GORBACHEV, A.N., KARPUNIN, A.M., MATUKANIS, L.F.

PROCESSING DATE--11SEP70

COUNTRY OF INFO--USSR

SOURCE--GEOLOGIYA I GEOFIZIKA, 1970, NR 3, PP 115-119

DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--FLUORINE, FLUORITE, MINERALOGY, GEOLOGIC SURVEY, NEUTRON
ACTIVATION ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/1273

STEP NO--UR/0210/70/000/003/0115/0119

CIRC ACCESSION NO--AP0106054

UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0106054

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE METHOD PRINCIPLES AND THE RESULTS OF FLUORINOMETRIC NEUTRON ACTIVATION SURVEY, DEVELOPED AND SAMPLED ON TRANSBAIKALIA APATITES ARE LISTED IN THE PAPER. AN APPLICATION OF THE SURVEY IS RECOMMENDED FOR APATITE, PHOSPHORITE AND FLUORITE MINERALIZATION PROSPECTING. THE WAYS FOR IMPROVEMENT OF THE FIELD NEUTRON ACTIVATION FLUORINOMETRY AND LONG TERM PLAN OF ITS APPLICATION FOR PROSPECTING OF OTHER COMMERCIAL MINERALS ARE MARKED.

UNCLASSIFIED

AA0046412

KARPUNIN

V.A.

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

4/70

241778 MEASURING LOW CYCLE FATIGUE in material subjected to bending is carried out by a testing machine comprising frame 1, devices 1 and 2 for fixing test pieces 4 and 5, mechanism for light or heavy loading of test pieces 6 and 7 respectively, drive 8 and control and measuring equipment. The arrangement for loading lightly the samples under test is in the form of a shaft on which there are clamps for fastening the samples.

27.6.67 as 1167275/25-28. V.I. DOBROVOLSKIY & V.A. KARPUNIN, IZHEV MECHANICAL INST, (1.9.69) Bul 14/18.4.69. Class 42k. Int.Cl.G 01n.

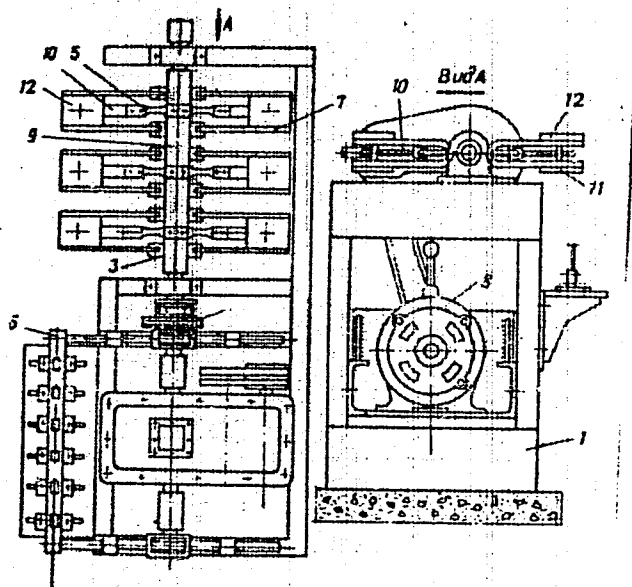
Izhevskiy Mekhanicheskiy Institut

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USSR

UDC 535.233+629.7.018.1

KARPUNOV, Ye. G., NEGRUTSAK, L. M., RYZHIK, A. B., FRATERMAN, S. I.,
and YURMANOV, Yu. A.

"Spectroscopic Investigation of Supersonic Heterogeneous Currents
in a Combustible Condensed Phase"

Novosibirsk, Fizika gorennya i vzryva, No 3, 1973, pp 387-391

Abstract: In connection with the problem of the combustion of metallic particles in ultrasonic currents, the authors describe investigations into the relative energy spectrum distribution in the interaction of detonation waves in stoichiometric hydrogen-air mixtures with aluminum and magnesium powder suspensions. They conducted their experiments in accordance with the method of heterochromic photometry, using a formula developed in this article for the radiating surface temperature. A description of the experimental equipment, which includes a shock tube, pressure sensors, and the ISP-51 spectrograph, is given. The tube was 7.5 m long and had an inner diameter of 100 mm, with the suspended material placed in the closed end. Results of the experiments were analyzed by comparing the experimental data with the conclusions of hydrodynamic theory.

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USSR

UDC 537.226+537:311.33+537+535

AUDZIONIS, A. I., KARPUS, A. S., Vil'nyus State Pedagogical Institute

"Influence of Electron-Phonon Interaction on the Optical Properties of Single Crystals of Antimony Trisulfide in the Near Infrared Region of the Spectrum"

Vil'nyus, Litovskiy Fizicheskiy Sbornik, Vol 13, No 5, 1973, pp 745-755

Abstract: It is shown that strong electron-phonon interaction exists in Sb_2S_3 single crystals. A study is made of the influence of this interaction on the optical properties of Sb_2S_3 crystals in the near infrared region of the spectrum. Anomalies of the coefficient of reflection (increase of reflection) and an extended absorption edge observed in Sb_2S_3 crystals in the region of 2-14 μm are explained by the interaction of light with polarons of small radius. The characteristic time of multiple-phonon processes is determined for Sb_2S_3 .

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1/2 026 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--SWITCHING EFFECT IN ANTIMONY TRISULFIDE SINGLE CRYSTALS -U-
AUTHOR--(03)-AUDZIONIS, A., GRIGAS, I., KARPUS, A.
COUNTRY OF INFO--USSR
SOURCE--FI2. TVERD. TELA 1970, 12(1), 146-50
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--SINGLE CRYSTAL, ELECTRIC FIELD EFFECT, THERMAL EFFECT,
ANTIMONY SULFIDE, SWITCHING THEORY, CHEMICAL REACTION KINETICS,
SEMICONDUCTOR MATERIAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1980/0247 STEP NO--UR/0181/70/012/001/0146/0150
CIRC ACCESSION NO--AP0048526
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0048526

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNDER THE ACTION OF AN ELEC. FIELD, STOICHIOMETRIC NEEDLE LIKE SINGLE CRYSTALS OF $Sb_{1-x}Sn_x$ SWITCH FROM THE HIGH OHMIC (H) STATE INTO THE LOW OHMIC (L) STATE. THE RESISTANCE OF THE L STATE IS 10^3 MINUS 10^4 FOLD LOWER THAN THE RESISTANCE OF THE H STATE. IN THE L STATE, METALLIC COND. IS PRESENT, WITH A TEMP. COEFF. OF RESISTANCE, β EQUALS (3-7) TIMES 10^4 NEGATIVE DEGREE AND IN THE H STATE, SEMICOND. IS PRESENT. THE ELEC. FIELD OF SWITCHING FROM THE H TO THE L STATE DEPENDS ON THE ELEC. COND. AND TEMP. OF THE CRYSTALS. THE EFFECT OF SWITCHING IS CLOSELY RELATED TO HEATING OF THE CRYSTAL AT THE MOMENT OF ACTION OF THE ELEC. FIELD. CRYSTALS SWITCHED FROM THE STABLE L TO THE H STATE RETURN UNDER THE ACTION OF A STRONG HIGH FREQUENCY OR MICROWAVE FIELD OR HEATING. THE KINETICS

WERE INVESTIGATED OF SWITCHING FROM THE L TO THE H STATE BY A STRONG MICROWAVE FIELD.

USSR

UDC: 621.372.852.3(088.8)

BARLASOV, R. L., DOROGUSHKIN, L. V., KARPUSHIN, P. N., KUNAVIN, V. V.,
MYASNIKOV, N. I., YAKUNIN, V. A.

"An Automatic Polarization Attenuator"

USSR Author's Certificate No 259198, filed 4 Dec 68, published 28 Apr 70
(from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B174 P)

Translation: The proposed attenuator consists of two fixed waveguide adapters, a movable section with an absorbing plate, a readout instrument, a rod linkage and a step-by-step drive motor. The rod linkage is made up of three levers mounted on a common frame. The drive lever is rigidly fixed to the axis of the drive motor, and the driven lever is secured to the axis of the movable section. These levers are hinged together through the third lever. The length of the levers is selected in such a way that the linkage has a transfer ratio determined from calculating the permissible value of signal attenuation per step of the drive motor for the entire range of rotation of the movable section. The attenuator provides a linear change in attenuation. Two illustrations. A. K.

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1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--DESIGN OF MAZUT NOZZLE MIXERS AND GAS MAZUT BURNERS FOR STEELMAKING
FURNACES -U-
AUTHOR-(02)-LISIYENKO, V.G., KARPUSHIN, V.K.
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(2), 165-9
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--NOZZLE, PETROLEUM RESIDUE, METALLURGIC FURNACE, STEEL
MANUFACTURING PROCESS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/1402 STEP NO--UR/0148/70/013/002/0165/0169
CIRC ACCESSION NO--AT0120195
UNCLASSIFIED

2/2 011
CIRC ACCESSION NO--AT0120195

UNCLASSIFIED

PROCESSING DATE--230C170

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CALCNS. WERE MADE TO DET. THE EFFECT OF VARIOUS FACTORS (SUCH AS THERMAL AND DYNAMIC DISEQUIL. IN THE NOZZLE MIXER, ENERGY LOSS OF THE GAS STREAM, ETC.) ON THE EXIT CROSS SECTION OF THE TITLE MIXER. CONSIDERABLE SLIPPAGE OCCURS AT THE MIXER EXIT, AND IF THIS IS NOT TAKEN INTO ACCOUNT IN THE CALCNS., THE DIAM. OF THE MIXER EXIT (A) WILL BE MUCH TOO LARGE WHILE THE EXIT SPEEDS OF THE FUEL ATOMIZING MEDIUM MIXT. (V) WILL BE TOO LOW. AN EQUATION WAS DERIVED WHICH GAVE VALUES OF A AND V CORRESPONDING TO EXPTL. DATA.
FACILITY: URAL. POLITEKH. INST., SVERDLOVSK, USSR.

UNCLASSIFIED

USSR

UDC 581.132.08

KARPUSHKIN, L. T.

"The Use of Infrared Gas Analyzer for Investigating CO₂ Exchange in Plants"
Moscow, Biofizicheskiye Metody v Fiziologii Rasteniy, Nauka, 1971, pp 44-71

Translation of Russian Abstract: The article describes the functional principles, the basic, generalized outline of the equipment, and the most important IRG (infrared gas analyzer) models. Considerations for selecting an IRG for physiological investigations are presented. The basic designs of the most popular IRG setups for investigating CO₂ exchange in plants are discussed. Basic attention is given to the differential setup which appears to be most useful, the main modules of this setup are described and, in the chapter on the "Exposition Chamber," questions concerning the microclimate in the chamber are discussed.

Calculations are performed, and it is demonstrated that in the absence of translocation by convection, CO₂ diffusion through the air layer adjacent to the leaf is too small to account for the observed speed of CO₂ assimilation by the leaf. On this basis, the aerodynamic regime prevailing at the leaf surface was determined as one of the basic external factors very important not only for transpiration and heat exchange but also for the rate of CO₂ assimilation. It is concluded that differences in the aerodynamic conditions

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USSR

KARPUSHKIN, L. T., Biofizicheskiye Metody v Fiziologii Rasteniy, Nauka, 1971, pp 44-71

may account for the discrepancies in results obtained by various methods with the use of various chambers.

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USSR

UDC 621.375.9

KARPUSHKO, F. V., RUBANOV, A. S., SINITSYN, G. V.

"Generation of the Internal Modes and Its Effect on the Operation of a Tunable Ruby Laser"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol XVIII, No 5, 1973, pp 813-815

Abstract: Results are presented from studies involving the observation of the kinetics and the spectrum of the internal ring modes in the ruby elements of a laser. In lasers with water cooling of the active cores the generation threshold of the internal types of oscillations is comparable to the generation threshold in the external resonator. A study was made of the effect of the generation of ring modes on the parameters of the tunable ruby laser.

The threshold pumping curves are presented for various cases. The dispersion resonator similar to the one described by F. V. Karpusko, et al. [Opticheskiye kvantovyye generatory v sovremennoy tekhnike, Part 2, Leningrad, Znaniye Press, 36, 1971] was used in the experiment. The selector had a dispersion of 15 cm^{-1} and a halfwidth of the transmission circuit of $\sim 0.05 \text{ cm}^{-1}$.

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Veterinary Medicine

USSR

UDC: 619:611-018.46-614.9-384.47-636.4

K
BUTS'YANOW, D.D., KARPITS, I.M.

"Immunomorphological Changes in Bone Marrow in Combined and Individual Vaccinations of Pigs Against Swine Fever and Erysipelas"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Sel'skokhozyaystvennyh nauk, No 2, 1970, pp 117-120

Abstract: A group of 3-month-old pigs was vaccinated against swine fever, another group against erysipelas, and the third group against both diseases. This process was repeated 14 days later. Examination of bone marrow 4, 8, and 20 days after the first vaccination, and 30 days after revaccination showed marked activation of myelopoiesis and of the reticulo-endothelial system, which was increased after the second vaccination. There was a marked increase of plasmatic cells after the second erysipelas vaccination. The increase in reticular cells and lymphocytes was more marked after administration of swine fever vaccine. Together with the proliferation of myeloblastic and lymphoid-reticular elements and plasma cells, an increase in the amount of RNA was noted. Gamma-globulin levels in the peripheral blood were also elevated. In cases of combined vaccination against swine fever and erysipelas, anti-erysipelas agglutinins were noted.

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USSR

USIPBAYEV, S., KAPYKOV, S. S., and SADVAKASOVA, K. A.

"Mathematical Model of Evaluation of Control of Transport Flow in System with Unreliable Channels"

Alma-Ata, Vestnik Akad. Nauk Kaz SSR, No 9, Sep 70, pp 60-63

Abstract: Statistical processing of data on the mine pit-transport-dump system for the Sarbayskiy open pit mine has shown that the volume of arrival of units in the system is well described by a Poisson distribution, while the servicing time required follows an exponential distribution. Consequently, the principal criteria can be defined using formulas from the theory of operations research, taking into consideration the random nature of change of the parameters of the system. The criteria of the system were calculated using a Minsk-22 computer. A nomogram was constructed on the basis of the results to determine the idle time of excavator units and trains, depending on the effectiveness factor. In order to eliminate some of the idealization, the Monte-Carlo method was used for further calculation. A flow chart is presented for an algorithm allowing determination of the optimal quantity and form of information required for realization of an automatic control system considering economic criteria corresponding to the level of control of the system used.

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USSR

UDC 547.341.07

KARRAFOVA, F. M., KAMAY, G. KH., YEFIMOVA, V. D., and FHI GABIYEVA, F. A.,
Kazan Chemical Technology Institute imeni S. M. Kirova

"Process for the Preparation of Methylchlorophosphines"

USSR Author's certificate No 362026, filed 24 Apr 70, published 13 Dec 72
(from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 2,
1973, p 55)

Translation: This process is based on tertiary phosphines and is improved
in that in order to strengthen the process, dichlorides of methylphosphonic
acid react with tertiary phosphines while being heated. The desired pro-
duct is subsequently separated by known methods. 2. The process in number
1 is improved in that it is carried out at temperatures between 175-190°C.
under a stream of inert gas, for example, carbon dioxide.

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